

What is claimed is:

1. A method of thermal spraying a material comprising thermal spraying said material from a thermal spray device with a coaxial gas shield having a shield gas flow substantially surrounding the effluent of the thermal spray device to produce a desired microstructure coating on at least a portion of the surface of a substrate and a standoff distance between the surface of the substrate and the exit end of the shielded thermal spray device is at least 20% longer than the standoff distance of a non-shielded thermal spray device and said shielded gas flowing thermal spraying producing a microstructure coating similar to a microstructure coating that would be produced using the smaller standoff of the non-shielded thermal spraying device.

2. The method of claim 1 wherein the material is a ceramic.

3. The method of claim 1 wherein the standoff distance is at least 50% longer.

4. The method of claim 1 wherein the coaxial shield gas flow is an essentially turbulent gas flow substantially surrounding the effluent of the thermal spray device.

5. The method of claim 3 wherein the coaxial shield gas flow is an essentially turbulent gas flow

substantially surrounding the effluent of the thermal spray device.

6. The method of claim 2 wherein said ceramic material is an oxide.

7. The method of claim 6 wherein said oxide is zirconia or a compound containing zirconia.

8. The method of claim 2 wherein said coating comprises layers of the ceramic material.

9. The method of claims 2 wherein said gas used in the coaxial gas shield is selected from the group consisting of argon,, nitrogen, air and mixtures thereof.

10. The method of claim 9 wherein the gas is argon.

11. The method of claim 3 wherein the material is a ceramic material.

12. The method of claim 11 wherein said ceramic is zirconia or a compound containing zirconia.

13. The method of claim 11 wherein said coating comprises layers of the ceramic material.

14. A coated article having a coated layer wherein the coated layer is produced by the method of claim 1.

15. The coated article of claim 14 wherein the coating is a ceramic material.

16. The coated article of claim 14 wherein said article is a component of a gas turbine engine.

17. The coated article of claim 15 wherein said article is a component of an internal combustion engine.

18. The coated article of claim 15 wherein the coated layer is produced by the method of claim 3.

19. The coated article of claim 18 wherein said article is a component of a gas turbine engine.

20. The coated article of claim 18 wherein said article is a component of an internal combustion engine.